TDV **Professional Engineering & Software**

CURRICULUM VITAE

Personal Data:

Name and Title:	Dorian JANJIC, Dipl. Ing.
Date of birth:	December 7, 1960
Place of birth:	Sarajevo
Nationality:	Austrian
Languages:	Serbo-Croatian (mother tongue) German, English
Name of Firm with which associated:	TDV GmbH, Graz Bentley Systems, Inc.
Present position in company:	Vice President Bridge Engineering Software
Years of experience:	15 years with TDV 4 years with other engineering firms
Education:	Dipl. Ing. / Civil Engineering / Sarajevo University of Technology, Faculty of Civil Engineering, Sarajevo

Key qualifications:

- Link between research and practical project work.
- Almost 20 years of experience in technical research, software development and structural analysis in a wide range of applications.
- Numerical analysis, static and dynamics problems, wind buffeting, rolling stock analysis.
- Software development, research, special numerical/technical solutions.
- FEM analysis, structural optimisation, non-linear structural analysis.
- Leading position within TDV's team for the development of bridge structural analysis software, road planning software and other application systems.

Research:

BrIM	Bridge Information Modelling
COMTEST	Testing of dynamic behaviour of existing railway bridges.
RL-DYNAMIK	Evaluation of guidelines for high speed railway bridges.
NUWIMOD	Numerical Wind Model.
FEMBRIDGE-Project	Using Finite Elements in bridge engineering.
TDV2000-Project	Development of the new TDV2000 software family.
CIMSTEEL-Project EUREKA EU 1309	Neutral software interface for steel and concrete structures.

Professional work:

- Mr. Janjic is TDV's technical leader linking technical research and every day engineering practice with almost 20 years of experience in numerical analysis, software development and bridge engineering. As TDV owner and CEO Mr. Janjic decided in May 2007 that TDV joins Bentley Systems, Inc. and he took the role of VP Bridge Engineering Software within Bentley Systems, Inc.

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- He has led TDV's technical department since 1998 and has concentrated his research work on bridge design software for the new generation – RM2000 and further releases (RM2004, RM2006). The RM software supports the analysis of bridge types from pre-stressed concrete solutions and composite and arch type bridges to large cable stayed bridges and suspensions bridges.

- Novel technical and numerical solutions, implemented in TDV's software products, allowed him to give high quality support to international project teams involved with difficult and sensitive structural situations. He was involved in various international projects, helping to overcome problems involving the non-linear behaviour of large-span bridges, structural optimisation, wind buffeting, erection control etc.

- Mr Janjic's success in the professional realm is demonstrated by the power of the new software which covers all major problems in bridge engineering. The RM software is widely used both nationally and internationally on hundreds of projects including the largest bridge projects in the world.

- Currently, he is leading bridge engineering software within Bentley Systems, Inc. One of key research projects is BrIM (Bridge Information Modelling). The heart of the solution is the integration of comprehensive bridge design software package RM with graphic platforms, visualization tools, road and rail software, foundation design, software aided data management and other special tools. The model shall be primarily established and managed by the bridge owner and made accessible via Internet for use by the involved parties.

Important technical and numerical solutions developed under Mr Janjic's direction:

- Numerical analysis of wind buffeting effects for long-span bridges.
- Numerical simulation of wind tunnel (CFD).
- Integrated software solution for pre-cast segmental including geometry and erection control.
- Coupled non-linear behaviour for long-span bridges.
- Time effects (creep, shrinkage and relaxation).
- Non-linear behaviour of stay-cables.
- Rolling stock and various Time-History analyses.
- Parametric definition of structural geometry.

Major bridge projects:

Sutong Bridge, Cable Stayed Bridge, China

The **Sutong Bridge** is situated between Nantong City and Changshu in the east of the Jiangsu province and forms an important passageway across the Changjiang River as part of the key national trunk road planned by the Ministry of Communications from Jiayin in Helongjiang Province to Nanping in Fujiang province. The Bridge project which adopts the two-way six-lane highway standard for the whole alignment, starts at the Xiaohai interchange on the Tongqi Highway and terminates at the Dong Bang interchange on the Sujiahang Highway. The total length covered by the project is 32.4 km. It consists of three parts: north bank linking engineering, crossing engineering and south bank linking engineering.
Crossing Engineering: total length is 8206 m. The main bridge is a double-cable-plane double-pylon steel box girder cable-stayed bridge 100+100+300+1088+300+100+100=2088□ The special channel is 140+268+140=548 m comprising a T type steel girder bridge.
North Bank Linking Engineering: total length 15.1 km with 2 interchanges, a toll gate and a service zone.
South Bank Linking Engineering: Total length 9.1 km, with 1 interchange (Project engineer: HPDI, China).

Scope of work: Structural modelling, non-linear construction stage calculation, dynamics, cable stressing optimisation.

TDV Technische Datenverarbeitung
Dorian Janjic & Partner GmbH

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Stonecutters Bridge, Cable Stayed Bridge, Hong-Kong

A multiple span viaduct culminating in a central cable stayed bridge with a main span of 1018 m over the seaways in Hong Kong harbour. The cable stayed portion of the bridge comprises a twin girder steel deck with concrete side spans that act as counter-balances during the cantilever erection of the main span. The side spans are 298 m long and the Pylons are 290 m high (Project engineer: Ove-Arup, Hong Kong).

Scope of work: Wind buffeting, structural modelling, non-linear construction stage calculation, cable stressing optimisation.

Shenzhen Western Corridor, Cable Stayed Bridge, Hong-Kong

A multiple span viaduct with a main navigation span consisting of a cable stayed bridge with a main span of 210 m. The cable stayed portion of the bridge comprises a multiple cell steel box deck with a backward sloping single pylon 150 m high having backstays tied into the deck on either side of the adjacent viaduct pier (Project engineer: Ove-Arup, Hong Kong).

Scope of work: Wind buffeting, structural modelling, non-linear construction stage calculation, cable stressing optimisation.

Hardanger Bridge, Suspension Bridge, Norway

The Hardanger bridge is constructed as a 2 lane suspension bridge with lanes for bicycles and pedestrians. With a main span of 1310 m and a total length of 1380 m the bridge will be the longest suspension bridge in Norway. The bridge towers elevate to 186 m above sea level. The sailing height under the bridge is 55 m.

Scope of work: Non-linear construction stage calculation, dynamics, wind buffeting, cable stressing optimisation, structural modelling.

Rach Mieu Bridge, Cable Stayed Bridge, Vietnam

The Rach Mieu Cable Stayed Bridge with a span arrangement of 117 : 270 : 117 m is located 71 km from Ho Chi Minh City on the National Highway No. 60 connecting Tien Giang and Ben Tre. This project is of major importance as it will replace the existing river crossing provided by ferry and consequently will have significant influence on the already high traffic flow in the region. The new bridge and National Highway No. 60 will form an Eastern transport corridor in the Cuu Long river delta.
National Highway No. 60 is an artery line of the Eastern coastal area of the Cuu Long river delta running from the National Highway No. 1A at Trung Luong (71 km from Ho Chi Minh City) through My Tho, Ben Tre to Tra Vinh, Soc Trang.
The bridge deck is to be constructed using the balanced cantilever method with cast-in-situ deck segments and employs a two stage stay cable stressing sequence to limit the stresses in the deck girder during construction (Project engineer: TEDI, Vietnam/Hanoi).

Scope of work: Wind buffeting, structural modelling, non-linear construction stage calculation, cable stressing optimisation.

Verige Bridge, Cable Stayed Bridge, Montenegro

A twin pylon cable stayed bridge spanning over the Bay of Boka Kotorska in Montenegro, located on a severe land fault in an area subject to high seismic action. The cable-stayed bridge has a pre-stressed concrete deck girder with a 450 m main span and a total length of 981 m. Both pylons are 169,37 m high. The deck cross section has a trapezoidal shape with a depth of 2.80 m and a width of 22.91 m. The bridge deck is to be constructed using the balanced cantilever method (Project engineer: GRADIS, Slovenia).

Scope of work: Structural modelling, seismic analysis, cable stressing optimisation.

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Kwangan Bridge, Suspension Bridge, Pusan, Korea

A three span continuous steel truss type suspension bridge, 900 metres long with transverse steel frames and an orthotropic steel deck split in 2 levels for traffic carrying both road and rail traffic. The main longitudinal trusses are supported by hangers from the suspension cables. The span arrangement is: 200 m: 500 m: 200 m (Project engineer: DONGAH, Korea).

Scope of work: Full non-linear analysis with large displacement behaviour, live-load analysis based on tangent stiffness matrix, construction stage analysis, eigen analysis.

Dou-Shan Viaduct, Extradosed Viaduct, Taiwan

A 1560 m long multiple spanned prestressed concrete extradosed viaduct carrying road traffic on the East-West highway in Taiwan. The bridge is to be built using the cast-in-situ balance free cantilever method for all of the main spans. The extradosed cables (Stay cables) are stressed during the cantilever construction once the relevant segment has been cast and prestressed (Project engineer: Sinotech, Taiwan).

Scope of work: Structural modelling, time effects, parametric pre-stressing model, construction stage analysis.

PAPERS/ARTICLES:

Mr Janjic has been involved both individually and jointly in the publication of several scientific papers for international journals and conferences.

PAPERS:

Consistent Design of Segmental CSB Concrete Bridges (D.Janjic,J.Stampler)
NCBC 2008 Concrete Bridge Conference, HPC - Safe, Affordable, and Efficient, St. Louis, Missouri (04.-07.05.2008)

Wind buffeting analysis of long span bridges. Comparison of steady state coefficient and flutter derivative approach (Dorian Janjic, Andreas Domaingo)
EASEC-11 - The Eleventh East Asia-Pacific Conference on Structural Engineering & Construction, Taipei (19.-21.11.2008)

The Evolution of Bridge Information Modeling (Dorian Janjic, Gabe Norona, Ronald Love, Raul Amaya, Don Peters)
EASEC-11 - The Eleventh East Asia-Pacific Conference on Structural Engineering & Construction, Taipei (19.-21.11.2008)

Software tool for wind design of CSB (D.Janjic, J.Stampler, A.Domaingo)
ASCE/SEI Structures Congress Crossing Borders 2008, Vancouver (24.-26.04.2008)

Sophisticated non-linear 4D structural analysis for CSB (D.Janjic, H.Bokan, H.Sorsky)
ASCE/SEI Structures Congress Crossing Borders 2008, Vancouver (24.-26.04.2008)

Hybrid Models for Efficiently Analysing Overall and Local Stability Problems in the Bridge Design Process (D. Janjic, J. Stampler)
IABSE conference "Information and Communication Technology (ICT) for Bridges, Buildings and Construction Practice" HELSINKI, FINLAND (04.-06.06.2008)

Bridge Solution instead of Bridge Design FEM Software (D. Janjic, G. Norona, Ron Love, R. Amaya)
IABSE conference "Information and Communication Technology (ICT) for Bridges, Buildings and Construction Practice" HELSINKI, FINLAND (04.-06.06.2008)

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COMPUTER WIND INVESTIGATIONS FOR LONG BRIDGE CROSSINGS, Dorian Janjic
IABMAS, 4th International conference on bridge maintenance, safety and management, KOREA
(13.-17.07.2008)

Comprehensive computer aided wind design for arbitrary long span bridges (D. Janjic, J. Stampler, A.
Domaingo)
EURODYN 2008, 7th European Conference on Structural Dynamics, Southampton, England
(07.-09.07.2008)

Experience from the Global Analysis of Sutong and Stonecutters bridge (D. Janjic);
IBC 2008 - 25th Annual International Bridge Conference, Pittsburgh, Pennsylvania, USA (02.-04.06.2008)

EARTHQUAKE ANALYSIS OF BRIDGE FOUNDATIONS IN PRACTICE (H.Bokan,D.Janjic,J.Stampler)
SCDOT - 6th National Seismic Conference on Bridges and Highways, Charleston, USA (27.-30.07.2008)

Bridge Information Modeling - Approach for Improving Safety and Serviceability from the Design Phase
throughout the Life Cycle (Dorian Janjic, Gabe Norona)
IABSE Chicago, Creating and Renewing Urban Structures, Tall Buildings, Bridges and Infrastructure
(14.-19.09.2008)

Erection Control Analysis - Meeting the Demands of New Construction Techniques (Dorian Janjic, Johann
Stampler)
IABSE Chicago, Creating and Renewing Urban Structures, Tall Buildings, Bridges and Infrastructure
(14.-19.09.2008)

Wind and extremely long bridges - a challenge for computer aided design (Andreas Domaingo, Dorian
Janjic, Johann Stampler)
IABSE Chicago, Creating and Renewing Urban Structures, Tall Buildings, Bridges and Infrastructure
(14.-19.09.2008)

Dynamic Response of Filler Beam Bridges during Train Transit (J. Stampler, D. Janjic, A. Domaingo)
EUROSTEEL 2008 - 5th European Conference on Steel and Composite Structures, Graz
(03.-05.09.2008)

Response of Bridges to Steady and Random Wind Load (A. Domaingo, J. Stampler, D. Janjic)
EUROSTEEL 2008 - 5th European Conference on Steel and Composite Structures, Graz
(03.-05.09.2008)

Consistent Analysis Method for Long Term Effects in Composite Bridges (D. Janjic, J. Stampler, H. Bo-
kan)
EUROSTEEL 2008 - 5th European Conference on Steel and Composite Structures, Graz
(03.-05.09.2008)

Application of pre-cast segmental method to increase construction efficiency (D. Janjic, J. Stampler,
A. Domaingo, H. Bokan)
SECON - International Conference and EurekaBuild event - Networks for sustainable environment and
high quality of life, Dubrovnik, (23.-25.05.2008)

Life cycle surveillance and management of bridges – Bridge Information Modelling (D. Janjic, J. Stampler,
A. Domaingo, H. Bokan)
SECON - International Conference and EurekaBuild event - Networks for sustainable environment and
high quality of life, Dubrovnik, (23.-25.05.2008)

2007

Use of specialized software tools for modern bridge design (H. Bokan, D. Janjic, J. Stampler)
China Bridge Congress 2007, Chongqing, China (28.-30.30.2007)
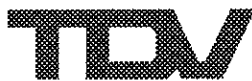
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Structural Analysis of the Sutong Bridge (D. Janjic)
China Bridge Congress 2007, Chongqing, China (28.-30.30.2007)

Balanced Cantilever Bridge: One typical example of necessary full non-linear analysis of piers)
(M. Beier, D. Janjic), IBRACON – 49° Congresso Brasilieiro do Concreto, Sao Paulo, Brasil (01.-05.09.2007)

Integrated Computer Wind Design for Bridge Engineering (J. Stampler, D. Janjic, A. Domaingo)
IABSE conference "Improving Infrastructure – Bringing People closer worldwide", Weimar (19.-21.09.2007)

Computer Aided Design & Erection of Long Suspension Bridges (D. Janjic, H. Sorsky, H. Bokan)
IABSE conference "Improving Infrastructure – Bringing People closer worldwide", Weimar 19.-21.09.2007)

The Discrete Vortex Method for Estimating the Aerodynamic Coefficients of Bridge Decks in Preliminary Design: A Wind Tunnel Validation with three Brazilian Projects (M. Beier, D. Janjic)
IABSE conference "Improving Infrastructure – Bringing People closer worldwide", Weimar 19.-21.09.2007)

Computational Fluid Dynamics als Ergänzung zu Windkanalmessungen im Brückenbau (J. Stampler, D. Janjic, A. Domaingo)
D-A-C-H-Tagung 2007 – Aktuelle Themen des Erdbebeningenieurwesens und der Baudynamik, Wien (27.-29.09.2007)

Long Span Bridges Computer Aided Wind Design (D. Janjic)
13th National Conference on Structural Wind Engineering, Tongji University, Shanghai, China (10.-14.10.2007)

Standardized Serviceability Tests of Railway Bridges (M. Heiden, J. Stampler, D. Janjic, C. Handel)
EVACES07 – Experimental Vibration Analysis of Civil Engineering Structures, Porto, Portugal (24.-26.10.2007)

2006

Consistent Non-Linear Structural Analysis of Long-Span-Bridges (D. Janjic, H. Sorsky)
ACECOMS - The Tenth East Asia Pacific Conference on Structural Engineering and Construction, Bangkok (03.-05.08.2006)

Use of specialized software tools for modern bridge design (J. Stampler, D. Janjic, H. Bokan, M. Heiden)
SECON – International Conference on Bridges, Dubrovnik (21.-24.05.2006)

Optimisation of the Tensioning Schedule for Cable-Stayed-Bridges using Dynamic Software (H. Bokan, D. Janjic, M. Heiden)
IABSE Conference – Responding to Tomorros's Challenges in Structural Engineering, Budapest (13.-15.09.2006)

Erection Control TDV's single tool solution for bridge design and construction (H. Bokan, D. Janjic)
IABSE Conference – Responding to Tomorros's Challenges in Structural Engineering, Budapest (13.-15.09.2006)

Computer Aided Design of Prestressed Concrete and Composite Bridges using novel TDV software (D. Janjic), AUSTROADS – Bridge Conference Bridging the Gap, Perth, Australia (12.-15.09.2006)

Aspects of Wind Buffeting Response and Non-linear Structural Analysis for Cable-Stayed Bridges (D. Janjic), International Conference on Bridge Engineering – Challenges in the 21st Century, Hong Kong (01.-03.11.2006)

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2005

Global Analysis of the Su tong Cable-Stayed Bridge (J. Miao, R. Xiao, M. Pei, X. Zhang, M. Pircher, D. Janjic)
IABSE Conference "Role of Stuctural Engineers towards Reduction of Poverty", New Delhi (19.-22.02.2005)

2004

Consistent Numerical Model for Wind Buffeting Analysis of Long-Span Bridges (D. Janjic, H. Pircher)
IABSE Conference "Metropolitan Habitats and Infrastructure", Shanghai, China (22.-24.09.2004)

Long Term Effects & Specific Problems in Concrete and Composite Bridges (D. Janjic, M. Pircher)
SECON Conference "Durability and Maintenance of Concrete Structures", Dubrovnik (21.-23.10.2004)

2003

Rolling Stock Analysis of Various Railway Bridges in Austria (M. Heiden, M. Pircher, H. Pircher, D. Janjic)
IABSE Conference "Structures for high-speed railway transportation", Antwerp, Belgium (27.-29.08.2003)

2002

Towards a Wholistic Approach to Bridge Design (M. Pircher, D. Janjic, H. Pircher, R. Q. Bridge)
IABSE Conference "Towards a Better Built Environment – Innovation, Sutainability, Information Technology", Melbourne (11.-13.09.2002)

ARTICLES:

Complete Computer Aided Design of Precast Segmental and Balanced Cantilever Bridges (A. Domaingo, D. Janjic), Bridge Design & Engineering, Issue # 50/2008.

Chinese Checkers (D. Janjic, J. Stampler), Bridge Design & Engineering, Issue # 46/2007.

Consistent Analysis of Cable Stayed Bridges (D. Janjic, J. Stampler), ACECOMS Magazine, June 2007.

Tough Challenge (D. Janjic, A. Bruer), Bridge Design & Engineering, Issue # 44/2006.

Graphic details (D. Janjic, J. Stampler), Bridge Design & Engineering, Issue # 42/2006.

One-stop shop (D. Janjic, B. Bintley), Bridge Design & Engineering, Issue # 41/2005.

Brückenbausoftware für Verbundkonstruktionen, Stahlbau # 74/2005, Heft 9.

Optimization of Cable Tensioning in Cable-Stayed Bridges (D. Janjic, M. Pircher, H. Pircher)
Journal of Bridge Engineering © ASCE, MAY/JUNE 2003.

Computer Aided Deflection Control in Bridge Design (M. Pircher, D. Janjic, R. Q. Bridge), Australian Journal of Structural Engineering, Volume 4, No. 1, 2003.

The Unit Load Method – Some Recent Applications (D. Janjic, M. Pircher, H. Pircher), Advances in Steel Structures, Vol II, Chan, Teng and Chung (Eds.) © 2002 Elsevier Science Ltd.